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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

AUG 21 1990

90-ERB-076

Contractors, Richland, Washington

President
Hanford Environmental Health Foundation

General Manager
Kaiser Engineers Hanford Company

Director
Pacific Northwest Laboratory

President
Westinghouse Hanford Company

Gentlemen:

STRATEGY FOR HANDLING AND DISPOSING OF PURGEWATER AT THE HANFORD SITE, WASHINGTON

The attached strategy document cited above was recently approved by the U. S. Environmental Protection Agency, Washington Department of Ecology and the Department of Energy, Richland Operations Office. Please implement the requirements of the strategy upon receipt of this letter.

Please express my gratitude and congratulations to those who helped develop this strategy.

Sincerely,

for R. D. Izatt, Director
Environmental Restoration Division

ERD:KMT

Attachment

cc w/att:
L. E. Borneman, WHC
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STRATEGY FOR HANDLING AND DISPOSING OF PURGEWATER AT THE HANFORD SITE, WASHINGTON

JULY 1990

1.0 PURPOSE AND OBJECTIVES

1.1 The purpose of this document is fourfold:

1.1.1 Describe the strategy for managing purgewater at the Hanford Site, Washington.

1.1.2 Describe purgewater collection criteria for groundwater monitoring wells on the Hanford Site, Washington.

1.1.3 Describe an implementation plan for demonstrating facility compliance in collecting, storing, handling and disposing of purgewater on the Hanford Site, Washington.

1.1.4 Set forth by written agreement the requirements for the management of purgewater on the Hanford Site, Washington.

1.2 The objectives of the strategy are to:

1.2.1 Continue with existing groundwater monitoring activities and proceed with new groundwater monitoring well installation pursuant to the requirements of: (1) the State of Washington Hazardous Waste Management Act of 1976 (Revised Code of Washington [RCW] 70.105) and Washington Administrative Code (WAC) 173-303, (2) the Resource Conservation and Recovery Act of 1976 (RCRA), (3) the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and (4) the Atomic Energy Act of 1954 as amended (AEA).

1.2.2 Comply with milestones set forth in the Hanford Federal Facility Agreement and Consent Order (informally referred to as the Tri-Party Agreement) for groundwater monitoring.

1.2.3 Provide an acceptable level of environmental protection.

2.0 BACKGROUND

2.1 STATEMENT OF THE PROBLEM

2.1.1 Monitoring of groundwater for radioactive and chemical constituents at the Hanford Site is required by the U.S. Department of Energy-Richland Operations Office (DOE-RL), the Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA). Groundwater is withdrawn from wells for: (1) developing newly constructed groundwater monitoring wells, (2) purging of existing wells prior to sample collection, (3) aquifer testing and (4) periodic cleaning and renovating of existing monitoring wells.

2.1.2 For purposes of this strategy, all groundwater extracted from the aquifer pursuant to actions one through four described in paragraph 2.1.1 above shall be defined as purgewater.

2.1.3 Portions of the uppermost unconfined aquifer underlying the Hanford Site are being extensively monitored due to elevated concentrations of various chemical and radionuclide constituents. When contaminated purgewater is generated, it shall be classified as containing newly generated solid waste and shall be subject to hazardous waste designation as described in Sections 2.1.4 and 3.6 of this strategy. However, for purposes of clarification and compliance with RCW 70.105, water contained in the aquifer shall not be considered a solid waste.

2.1.4 To protect public health and safety and protect the environment from the improper disposal or management of purgewater, DOE-RL will manage purgewater on the Hanford Site as agreed to in this document.

2.2 IMPACT ON PROGRAMS

2.2.1 Groundwater well installation projects and monitoring programs at Hanford are impacted by the current Hanford Site capacity to store, treat, and dispose of purgewater in accordance with regulatory requirements of dangerous waste management as promulgated in WAC 173-303. RCRA and operable unit specific projects and programs were instituted for compliance with the Tri-Party Agreement. However, no milestones for defining treatment or disposal criteria for purgewater are set forth in that agreement. Consequently, until approved industrial technologies are available for treatment of contaminated purgewater containing chemical constituents and radionuclides above agreed to collection criteria, purgewater will be stored on the Hanford Site in accordance with this agreement.

2.2.2 The large volume of purgewater generated during aquifer testing presents logistical handling, transportation, and storage problems. However, the generation of aquifer test purgewater is necessary to determine physical characteristics of the Hanford Site hydrology. Therefore, it is herein agreed that aquifer testing will be performed in a manner consistent with the items listed below: (1) In geographical areas on the Hanford Site where constituent concentrations are lower than the health or environmental-based criteria shown in Tables 1 and 3 of this document, as determined by data from adjacent wells and/or initial well development samples, aquifer test purgewater may be discharged to the ground and prior approval by Ecology is not required; (2) Aquifer testing may be performed at the discretion of DOE-RL in any area, without prior Ecology approval, if the resulting purgewater is collected and stored for treatment as required by this strategy; (3) Aquifer testing performed as part of an approved past practice work plan, RCRA assessment or closure plan will be performed in accordance with section 3.2.5 of this strategy; (4) In selected cases it may be determined that the benefits of performing pump tests in contaminated areas, that require too large a quantity of purgewater to reasonably contain (and hence may require alternate purgewater management) may be justified. In this case section 3.7 of this strategy will be invoked.

3.0 PURGEWATER MANAGEMENT CRITERIA

Existing federal and state regulations and policy guidance are indeterminate regarding specific disposal criteria or standards for the handling and management of purgewater. Unmanaged disposal of purgewater containing significant quantities of hazardous and/or radioactive liquids to the soil could potentially allow these substances to accumulate and create additional contaminated sites requiring remediation. Collection, storage, treatment and disposal of purgewater creates additional management and environmental concerns. At present, effective treatment methods have not been developed for all of the hazardous and radioactive substances and combinations of mixed wastes that may occur in Hanford groundwater. Treatment of very low concentration contaminated water is in many instances ineffectual. Therefore, a balanced approach to purgewater management is needed. The objective of this strategy is to provide an acceptable level of health and environmental protection by minimizing the impact of soil discharge of contaminated purgewater. This is accomplished by requiring the collection of purgewater with levels of hazardous and radioactive constituents above an agreed-to health and environmental-based criteria for potential future treatment and disposal. The result is a cost effective, environmentally justifiable program. Effective use of federal funds will result in a greater environmental return per dollar spent as these dollars can be allotted to more serious environmental and health risk problems. Collection of all purgewater is not necessary due to the minimal health and environmental risk incurred in discharging these contaminants to the ground. Purgewater that may be discharged to the ground without treatment under this strategy is of relatively low concentration and volume, and is managed so as to minimize the accumulation of contamination and to reduce the potential of driving any existing contaminants further into the soil. The fact that the Hanford Site is in an arid environment with minimal recharge reinforces this approach.

To clarify these issues, DOE-RL, Ecology and EPA herein agree to the following purgewater management criteria for implementation at the Hanford Site, Washington. The effectiveness of this program will be evaluated by the three parties over the next year, incorporating changes as appropriate.

3.1 COLLECTION CRITERIA

3.1.1 Purgewater from Hanford Site monitoring wells will be managed in accordance with health and environmental-based criteria. Purgewater collection criteria will be based on 10 times Maximum Contaminant Levels (10X MCLs) for drinking water or 10 times EPA's Chronic Freshwater Toxicity Levels (CFWTLs)(10X CFWTLs), or 10 times the Practical Quantitation Limits (PQLs) of SW 846 for Table 1 constituents, with the application of the most restrictive criteria for designation of purgewater requiring collection. Use of EPA's designation of CFWTLs is included in this strategy as environmental-based criteria as a result of the protection afforded to freshwater biota. The radionuclide standards are based on 10X the MCLs referenced in National Interim Primary Drinking Water Regulations (see also 40CFR141.16(b) dated July 1, 1989) except for uranium and plutonium standards which are based on ten times (10X) one twenty-fifth Derived Concentration Guides as defined in DOE Order 5400.5. Tritium is not included in purgewater determinations because effective treatment technology has not been demonstrated. Disposal to the soil is a less hazardous pathway to biota than storing tritium contaminated water above ground which would involve a larger airborne pathway. Table 1 to this agreement is a listing of the most restrictive of the applicable standards which are the collection criteria for radionuclides and chemical constituents.

3.1.2 Chemical analyses used to determine the presence and concentration of constituents for RCRA wells are those analytical techniques and detection limits used for RCRA groundwater monitoring, Test Method for Evaluating Solid Waste--Physical/Chemical Methods, SW-846, Rev. 3. Chemical analyses used to determine the presence and concentration of constituents for Past Practice investigations are defined in the approved Work Plan or approved pre-work plan document. To qualify as a contaminant, the concentration of the constituent must be above naturally occurring levels. DOE-RL shall demonstrate groundwater constituent background levels which shall be subject to approval by Ecology and EPA. No additional analyses, other than those normally used for monitoring purposes, will be conducted in order to determine the collection category of the purgewater.

3.1.3 DOE-RL will collect purgewater that contains radionuclides that exceed ten times (10X) MCLs for specific isotopes listed by the EPA. Tritium is excluded from collection.

3.1.4 Purgewater across the Hanford Site will be collected and stored for future treatment when the concentration of constituents exceed collection criteria listed in Table 1.

3.1.5 Purgewater collection criteria for specific constituents may be modified based on analytical detection levels, background concentrations, treatability, or other factors mutually acceptable to all parties to this agreement.

3.1.6 Purgewater collection criteria for the following chemical constituents will be the analytical detection limits as listed in EPA Method SW-846. Table 1 specifies EPA Method SW-846 collection criteria for these compounds because existing detection limits exceed CFWTL.

(i) DDE
(ii) DDT
(iii) Dieldrin
(iv) Dioxin
(v) Endrin
(vi) Heptachlor
(vii) Hexachlorobenzene
(viii) Isobutyl Alcohol
(ix) Parathion
(x) Silver
(xi) Toxaphene

3.1.7 Non-chemical contaminants and physical characteristics of purgewater (e.g., alkalinity, turbidity, color, total dissolved solids, coliform bacteria) will not be used as collection criteria.

3.1.8 Collection criteria will be based upon filtered metal analyses. Unfiltered metal analyses may misrepresent constituent levels present in purgewater which may be the result of sediment, wearing of drill bits, and oxidation residues on the well casings.

3.1.9 Because of historical DOE-RL requirements, groundwater monitoring sample analyses at Hanford are based on constituent lists that do not conform to chemical constituents listed in the CFWTL. Therefore, chemical compounds with no history of analyses at Hanford will be removed from consideration as collection criteria (see Table 2). No additional analyses, other than those normally used for groundwater monitoring purposes, will be performed in order to determine the collection category of the purgewater.

3.1.10 DOE-RL will submit to Ecology and EPA a list of chemical constituents present in Hanford groundwater in excess of the 10X criteria by October 1, 1990. This list will be used to determine which wells will be excluded from the 10X collection criteria, based on their natural occurrence in the Hanford Site groundwater.

3.1.11 Assignment of wells into collection categories will be performed on the basis of existing groundwater analytical data. Where existing data are insufficient to assign a well to a collection category, the chemical and radiological composition of an adjacent well may be used as indicator wells to establish purgewater disposition. If adjacent wells are also inadequate (or do not exist) to determine disposition, approved indicator parameters will be identified and analyses performed that can be used to establish a collection category. Wherever possible, the analyses performed for determination of purgewater disposition will be limited. Indicator parameters and adjacent indicator wells will be agreed upon by all parties. RCRA or Past Practice Operable Unit Manager Meeting Minutes will be the approval record. Decisions involving the site-wide monitoring program will be made through representation of DOE-RL by the Safety and Environment Division (SED) in these meetings.

3.1.12 Because of the laterally extensive plume of carbon tetrachloride beneath the 200 West Area, all purgewater from 200 West Area, except for the expansion area will be collected and stored.

3.1.13 Table 4 lists wells requiring collection as determined by the data available in June 1990. This list will be subject to change as new data becomes available.

3.2 MANAGEMENT PRACTICES

3.2.1 The collection criteria will be applicable to all wells on the Hanford Site.

3.2.2 Purgewater containing constituents in concentrations lower than the collection criteria can be discharged to the soil at or in the immediate vicinity of the well head when such wells do not monitor the following:

(i) designated RCRA Solid Waste Management Units (SWMUs)
(ii) burial grounds
(iii) active/inactive liquid effluent disposal sites
(iv) known surface or subsurface soil contamination areas.

Purgewater from wells in the areas cited above will be taken to other areas on the site and discharged directly to the soil or to B-Pond.

3.2.3 Purgewater containing constituents in excess of the collection criteria will be collected and stored in ModuTanks located in the 600 area immediately east of the 200 east area.

3.2.4 Based upon the list of major contaminants to be used for the collection and evaluation of purgewater, DOE-RL will identify a range of treatment and disposal options for purgewater collected pursuant to Paragraph 3.2.3 of this strategy. From these options, DOE-RL will propose the preferred method which will consider both the environmental protection offered and the cost effectiveness of the option. Ecology and the EPA will concur in the selection of the final treatment and disposal selection.

3.2.5 DOE-RL agrees to resume aquifer pump testing as required in approved Past Practice Work Plans, RCRA Assessment or Closure Plans. Nomination of wells for aquifer testing for these purposes will be made by DOE-RL and will be initially focused on existing wells having constituent concentrations less than the collection criteria. Final approval of wells to be used in aquifer testing for these purposes and disposition of the purgewater will be approved by Ecology and EPA.

3.3 DISPOSAL CATEGORIES

3.3.1 Sample analyses from previous sampling events (usually quarterly) will be used to determine the disposal category for purgewater from wells in the monitoring mode.

3.3.2 Additional analyses to determine purgewater disposition will only be performed if the disposition of purgewater cannot be established through existing data or indicator wells adjacent to the well in question. If additional analysis is needed to determine disposition, approved indicator parameters, based on substances of concern in adjacent wells or near related or adjacent facilities will be used to determine the need for collection.

3.4 TREATMENT

3.4.1 DOE-RL shall actively pursue treatment technology that will reduce concentrations of contaminants in radioactive liquid effluents rendering them acceptable for discharge to the environment. Liquid effluent treatment systems currently being designed for the Hanford Site will be evaluated for the inclusion of purgewater in the treatment process. If it is determined to be technically feasible, treatment of purgewater collected under Paragraph 3.2.3 of this strategy will be conducted in accordance with terms and conditions specified in an applicable treatment facility liquid effluent disposal permit.

3.4.2 Purgewater requiring collection and storage in the ModuTanks in the 600 area will be treated prior to discharge to soil or surface waters on the Hanford Site.

3.5 PERMITTING STRATEGY

3.5.1 The regulatory implementation mechanism for this purgewater management strategy will be through inclusion as Appendix F to the Action Plan of the Hanford Federal Facility and Consent Order (Tri-Party Agreement). DOE-RL, Ecology and EPA also agree that requirements contained in the strategy will be included in the Hanford Site RCRA Permit issued by Ecology. The strategy will also be included by reference into past practice work plans. The site-wide monitoring network is maintained for compliance with DOE Order 5400.1; however, purgewater associated with this program will be managed under the terms of this strategy.

3.6 REGULATORY PROVISIONS

3.6.1 All purgewater requiring collection and storage will be managed in compliance with the provisions of applicable permits and consistent with RCRA and WAC regulations for the Treatment, Storage and Disposal of hazardous/dangerous waste. However, no designation as to the specific source of the waste (i.e., listed waste) will apply.

3.6.2 In accordance with regulatory definition, purgewater is a dangerous waste when it exhibits the characteristics of dangerous waste (i.e., ignitability, corrosivity, reactivity, and extraction procedure toxicity), or as determined by designation or bioassay pursuant to the Washington State Administrative Code (WAC), Dangerous Waste Regulations, 173-303.

In signing this purgewater management strategy, Ecology agrees that purgewater management at Hanford is not subject to the groundwater listed waste designation procedures as set forth in WAC Chapter 173.303.

3.7 SPECIAL CIRCUMSTANCES

3.7.1 RCRA and CERCLA Unit Managers designated by the respective Tri-Party Agreement participants (DOE-RL, Ecology and EPA) and SED shall have authority to negotiate unique purgewater disposal criteria not specified in this strategy. Any negotiations conducted outside of the scope of this strategy will only be conducted for unusual situations where unique application of the existing strategy is impractical.

3.7.2 Prior to the implementation of any special purgewater management actions negotiated by Unit Managers or SED, they will prepare a jointly signed decision paper specifying the technical and regulatory justifications for their actions for submittal to the Tri-Party Agreement Project Managers for approval.

3.7.3 The provisions of this strategy shall be reviewed annually by the signatory parties or their designees for purposes of amending the document if it is deemed necessary... If there is a significant need by any of the signatory parties for revision at any time, the strategy may be revised and approved by them.

3.8 It is the express intent of all parties that full implementation of this strategy will occur by October 1, 1990. Until such time as this purgewater management agreement is approved and signed by DOE-RL, Ecology, and EPA, DOE-RL will continue to manage purgewater as previously agreed to with Ecology and the EPA.

7/18/90
Steven A. Wisness
Hanford Project Manager
U.S. Department of Energy
Richland Operations Office

7/31/90
Timothy Nord
Hanford Project Manager
State of Washington
Department of Ecology

8/1/90
Paul T. Day
Hanford Project Manager
U.S. Environmental Protection Agency
Hanford Project Office

Table 1. Collection Criteria

Constituent	Detm. Limit	Collection Criteria	Units	Basis[1]
1,1,1,2-tetrachlorethane	10.0	50.0	PPB	PQL
1,1,1-trichloroethane	5.0	2000.0	PPB	MCL
1,1,2,2-tetrachloroethane	5.0	24000.0	PPB	CFWTL
1,1,2-trichloroethane	5.0	2000.0	PPB	MCL[2]
1,1-dichloroethane	5.0	10.0	PPB	PQL
1,1-dichloroethylene	10.0	70.0	PPB	MCL
1,2,3,4-tetrachlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3,5-tetrachlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3-trichlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3-trichloropropane	10.0	50.0	PPB	PQL
1,2,4,5-tetrachlorobenzene	10.0	100.0	PPB	PQL
1,2,4-trichlorobenzene	10.0	100.0	PPB	PQL
1,2-dibromo-3-chloropropane	10.0	50.0	PPB	PQL
1,2-dibromoethane	10.0	50.0	PPB	PQL
1,2-dichlorobenzene	10.0	500.0	PPB	CFWTL
1,2-dichloroethane	5.0	50.0	PPB	MCL
1,2-dichloropropane	5.0	57000.0	PPB	CFWTL
1,3,5-trichlorobenzene	10.0	500.0	PPB	CFWTL
1,3-dichlorobenzene	10.0	500.0	PPB	CFWTL
1,3-dichloropropene	5.0	2440.0	PPB	CFWTL
1,4-dichloro-2-butene	10.0	50.0	PPB	PQL
1,4-naphthoquinone	10.0	100.0	PPB	PQL
1-naphthylamine	10.0	100.0	PPB	PQL
2,3,4,6-tetrachlorophenol	10.0	100.0	PPB	PQL
2,4,5-T	2.0	20.0	PPB	PQL
2,4,5-TP silvex	2.0	100.0	PPB	MCL
2,4,5-trichlorophenol	10.0	100.0	PPB	PQL
2,4,6-trichlorophenol	10.0	9700.0	PPB	CFWTL
2,4-D	2.0	1000.0	PPB	MCL
2,4-dichlorophenol	10.0	3650.0	PPB	CFWTL
2,4-dimethylphenol	10.0	50.0	PPB	PQL
2,4-dinitrophenol	10.0	500.0	PPB	PQL
2,4-dinitrotoluene	10.0	2300.0	PPB	CFWTL
2,6-dichlorophenol	10.0	100.0	PPB	PQL
2,6-dinitrotoluene	10.0	2300.0	PPB	CFWTL
2-Hexanone	50.0	500.0	PPB	PQL
2-Methylnaphthalene	10.0	100.0	PPB	PQL
2-acetylaminofluorene	10.0	100.0	PPB	PQL
2-chloronaphthalene	10.0	100.0	PPB	PQL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
2-chlorophenol	10.0	20000.0	PPB	CFWTL
2-naphthylamine	10.0	100.0	PPB	PQL
2-picoline	10.0	50.0	PPB	PQL
3,3'-dichlorobenzidine	10.0	200.0	PPB	PQL
3,3'-dimethylbenzidine	10.0	100.0	PPB	PQL
3-methylcholanthrene	10.0	100.0	PPB	PQL
4,6-dinitro-o-cresol and salts	10.0	500.0	PPB	PQL
4-Nitroquinoline 1-oxide	10.0	100.0	PPB	PQL
4-aminobyphenyl	10.0	100.0	PPB	PQL
4-bromophenyl phenyl ether	10.0	100.0	PPB	PQL
5-nitro-o-toluidine	10.0	100.0	PPB	PQL
7,12-dimethylbenz[a]anthracene	10.0	100.0	PPB	PQL
Acenaphthalene	10.0	100.0	PPB	PQL
Acenapthene	10.0	5200.0	PPB	CFWTL
Acetone	10.0	1000.0	PPB	PQL
Acetonitrile	10.0	1000.0	PPB	PQL
Acetophenone	10.0	100.0	PPB	PQL
Acrolein	10.0	210.0	PPB	CFWTL
Acrylonitrile	10.0	26000.0	PPB	CFWTL
Aldrin	.1	.5	PPB	PQL
Allyl Chloride	100.0	100.0	PPB	PQL[3]
Alpha,alpha-dimethylphenethyla	10.0	100.0	PPB	PQL
Alpha-BHC	.1	.5	PPB	PQL
Aniline	10.0	100.0	PPB	PQL
Anthracene	10.0	100.0	PPB	PQL
Antimony, filtered	100.0	16000.0	PPB	CFWTL
Antimony-125	48.0	3000.0	pCi/L	MCL
Aramite	10.0	100.0	PPB	CFWTL
Arochlor 1016	1.0	1.0	PPB	CFWTL[3]
Arochlor 1221	1.0	1.0	PPB	CFWTL[3]
Arochlor 1232	1.0	1.0	PPB	CFWTL[3]
Arochlor 1242	1.0	1.0	PPB	CFWTL[3]
Arochlor 1248	1.0	1.0	PPB	CFWTL[3]
Arochlor 1254	1.0	1.0	PPB	CFWTL[3]
Arochlor 1260	1.0	1.0	PPB	CFWTL[3]
Arsenic, filtered	5.0	480.0	PPB	CFWTL
Barium, filtered	6.0	10000.0	PPB	MCL
Benz[a]anthracene	10.0	100.0	PPB	PQL
Benzene	5.0	50.0	PPB	MCL
Benzo(ghi)perylene	10.0	100.0	PPB	PQL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Benzo(k)fluoranthene	10.0	100.0	PPB	PQL
Benzo[a]pyrene	10.0	190.0	PPB	PQL
Benzo[b]fluoranthene	10.0	100.0	PPB	PQL
Benzyl Alcohol	10.0	200.0	PPB	PQL
Beryllium, filtered	5.0	53.0	PPB	CFWTL
Beta-BHC	.1	.5	PPB	PQL
Bis(1-chloro-1-methylethyl)ether	10.0	100.0	PPB	PQL
Bis(2-chloroethoxy) methane	10.0	100.0	PPB	PQL
Bis(2-chloroethyl) ether	10.0	100.0	PPB	PQL
Bis(chloromethyl)ether	5.0	100.0	PPB	PQL
Bromodichloromethane	5.0	10.0	PPB	PQL
Bromoform	5.0	20.0	PPB	PQL
Cadmium, filtered	2.0	11.0	PPB	CFWTL
Carbon disulfide	10.0	50.0	PPB	PQL
Carbon tetrachloride	5.0	50.0	PPB	MCL
Carbon-14	20.0	20000.0	pCi/L	MCL
Cesium-137	20.0	2000.0	pCi/L	MCL
Chlordane	1.0	1.0	PPB	CFWTL[3]
Chloride	500.0	2500000.0	PPB	MCL
Chlorobenzene	5.0	20.0	PPB	PQL
Chlorobenzene (by ABN)	10.0	20.0	PPB	PQL
Chlorobenzilate	300.0	300.0	PPB	PQL[3]
Chloroethane	10.0	50.0	PPB	PQL
Chloroform	5.0	1000.0	PPB	MCL
Chromium(VI)	50.0	110.0	PPB	CFWTL
Chromium, filtered	10.0	110.0	PPB	CFWTL[4]
Chrysene	10.0	100.0	PPB	PQL
Cobalt-60	22.5	1000.0	pCi/L	MCL
Copper, filtered	10.0	120.0	PPB	CFWTL
Cresols	10.0	100.0	PPB	PQL
Cyanide	10.0	52.0	PPB	CFWTL
DDD	.1	1.0	PPB	PQL
DDE	.1	0.5	PPB	PQL
DDT	.1	.1	PPB	CFWTL[3]
Delta-BHC	.1	1.0	PPB	PQL
Di-n-propylnitrosamine	10.0	100.0	PPB	PQL
Dibenz[a,h]anthracene	10.0	100.0	PPB	PQL
Dibenzofuran	10.0	100.0	PPB	PQL
Dibromochloromethane	5.0	10.0	PPB	PQL
Dichlorodifluoromethane	10.0	50.0	PPB	PQL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Dieldrin	.1	.1	PPB	CFWTL[3]
Dillate	10.0	100.0	PPB	PQL
Dimethoate	2.0	100.0	PPB	PQL
Dinitrobenzene	10.0	100.0	PPB	PQL
Dinoseb	10.0	10.0	PPB	PQL
Dioxane	500.0	1500.0	PPB	PQL
Dioxin	.1	.1	PPB	CFWTL[3]
Diphenylamine	10.0	100.0	PPB	PQL
Disulfoton	2.0	20.0	PPB	PQL
Endosulfan I	.1	.6	PPB	CFWTL
Endrin	.1	.1	PPB	CFWTL[3]
Ethyl benzene	5.0	20.0	PPB	PQL
Ethyl methacrylate	10.0	50.0	PPB	PQL
Ethyl methanesulfonate	10.0	100.0	PPB	PQL
Fluoranthene	10.0	100.0	PPB	PQL
Fluorene	10.0	100.0	PPB	PQL
Fluoride	500.0	20000.0	PPB	MCL
Gross alpha	4.0	150.0	pCi/L	MCL
Gross beta	8.0	500.0	pCi/L	MCL
Heptachlor	.1	.1	PPB	CFWTL[3]
Heptchlor epoxide	.1	10.0	PPB	PQL
Hexachlorobenzene	10.0	10.0	PPB	PQL[3]
Hexachlorobutadiene	10.0	93.0	PPB	CFWTL
Hexachlorocyclopentadiene	10.0	52.0	PPB	CFWTL
Hexachloroethane	10.0	5400.0	PPB	CFWTL
Hexachlorophene	10.0	100.0	PPB	PQL
Hexachloropropene	10.0	100.0	PPB	PQL
Hydrogen sulfide	10.0	20.0	PPB	CFWTL
Indeno(1,2,3-cd)pyrene	10.0	100.0	PPB	PQL
Iodine-129	1.0	10.0	pCi/L	MCL
Iodine-131	20.0	30.0	pCi/L	MCL
Iodomethane	10.0	50.0	PPB	PQL
Iron, filtered	30.0	3000.0	PPB	MCL
Isobutyl Alcohol	10000.0	10000.0	PPB	PQL[3]
Isodrin	10.0	100.0	PPB	PQL
Isophorone	10.0	100.0	PPB	PQL
Isosafrole	10.0	100.0	PPB	PQL
Kepone	1.0	100.0	PPB	PQL
Lead, filtered	5.0	32.0	PPB	CFWTL
Lindane, gamma-BHC	.1	.8	PPB	CFWTL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Manganese, filtered	5.0	500.0	PPB	MCL
Mercury, filtered	.1	.1	PPB	CFWTL
Methacrylonitrile	10.0	50.0	PPB	PQL
Methapyrilene	10.0	100.0	PPB	PQL
Methoxychlor	3.0	3.0	PPB	CFWTL[3]
Methyl bromide	10.0	100.0	PPB	PQL
Methyl chloride	10.0	10.0	PPB	PQL
Methyl ethyl ketone	10.0	100.0	PPB	PQL
Methyl isobutyl ketone	10.0	50.0	PPB	PQL
Methyl methacrylate	10.0	20.0	PPB	PQL
Methyl methanesulfonate	10.0	100.0	PPB	PQL
Methyl parathion	2.0	5.0	PPB	PQL
N-Nitrosodiphenylamine	10.0	100.0	PPB	PQL
N-nitrosodi-n-butylamine	10.0	100.0	PPB	PQL
N-nitrosodiethylamine	10.0	100.0	PPB	PQL
N-nitrosodimethylamine	10.0	100.0	PPB	PQL
N-nitrosomethylethylamine	10.0	100.0	PPB	PQL
N-nitrosomorpholine	10.0	100.0	PPB	PQL
N-nitrosopiperidine	10.0	100.0	PPB	PQL
Naphthalene	10.0	6200.0	PPB	CFWTL
Nickel, filtered	10.0	1600.0	PPB	CFWTL
Nickel-63	10.0	500.0	pCi/L	MCL
Nitrate	500.0	450000.0	PPB	MCL
Nitrobenzine	10.0	100.0	PPB	PQL
Nitrosopyrrolidine	10.0	100.0	PPB	PQL
O,O,O-triethyl phosphorothioate	10.0	100.0	PPB	PQL
O-toluidine hydrochloride	10.0	100.0	PPB	PQL
P-chloro-m-cresol	10.0	50.0	PPB	PQL
P-chloroaniline	10.0	200.0	PPB	PQL
P-dimethylaminoazobenzene	10.0	100.0	PPB	PQL
P-nitroaniline	10.0	500.0	PPB	PQL
Parathion	2.0	2.0	PPB	CFWTL[3]
Pcdd's	.0	.1	PPB	PQL
Pcdf's	.0	.1	PPB	PQL
Pentachlorobenzene	10.0	100.0	PPB	PQL
Pentachloroethane	10.0	11000.0	PPB	CFWTL
Pentachloronitrobenzene	10.0	100.0	PPB	PQL
Pentachlorophenol	50.0	130.0	PPB	CFWTL
Phenacetin	10.0	100.0	PPB	PQL
Phenanthrene	10.0	100.0	PPB	PQL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
Phenol	10.0	25600.0	PPB	CFWTL
Phenylenediamine	10.0	100.0	PPB	PQL
Phorate	2.0	20.0	PPB	PQL
Phthalic acid esters	10.0	30.0	PPB	CFWTL
Plutonium-238	.1	16.0	pCi/L	DCG
Plutonium-239,40	.1	12.0	pCi/L	DCG
Pronamide	10.0	100.0	PPB	PQL
Propionitrile	5.0	50.0	PPB	PQL
Pyrene	10.0	100.0	PPB	PQL
Pyridine	500.0	500.0	PPB	PQL
Radium	1.0	50.0	pCi/L	MCL
Ruthenium-103	20.0	2000.0	PPB	MCL
Ruthenium-106	172.5	300.0	pCi/L	MCL
Safrol	10.0	100.0	PPB	PQL
Selenium	5.0	100.0	PPB	MCL
Silver, filtered	10.0	10.0	PPB	CFWTL[3]
Strontium-89	5.0	200.0	pCi/L	MCL
Strontium-90	5.0	80.0	pCi/L	MCL
Styrene	5.0	10.0	PPB	PQL
Sulfate	500.0	2500000.0	PPB	MCL
Sym-trinitrobenzene	10.0	100.0	PPB	PQL
Technetium-99	15.0	9000.0	pCi/L	MCL
Tetrachloroethylene	5.0	8400.0	PPB	CFWTL
Tetraethylpyrophosphate	2.0	100.0	PPB	PQL
Thallium	5.0	400.0	PPB	CFWTL
Tin, filtered	30.0	80000.0	PPB	PQL
Toluene	5.0	20.0	PPB	PQL
Toxaphene	1.0	1.0	PPB	CFWTL[3]
Trans-1,2-dichloroethylene	5.0	10.0	PPB	PQL
Trichloroethylene	5.0	50.0	PPB	MCL
Trichloromonofluoromethane	10.0	50.0	PPB	PQL
Uranium	.5	400.0	pCi/L	DCG
Uranium, chemical	.7	590.0	UG/L	DCG
Vanadium, filtered	5.0	400.0	PPB	PQL
Vinyl Acetate	5.0	50.0	PPB	PQL
Vinyl chloride	10.0	20.0	PPB	MCL
Xylene-m	5.0	50.0	PPB	PQL
Xylene-o,p	5.0	50.0	PPB	PQL
Zinc, filtered	5.0	1100.0	PPB	CFWTL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis[1]
m-Nitroaniline	10.0	500.0	PPB	PQL
o-Nitroaniline	10.0	500.0	PPB	PQL
p-Dichlorobenzene	10.0	500.0	PPB	PQL
p-Nitrophenol	10.0	1500.0	PPB	CFWTL

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1 The basis for collection criteria are as follows:

- MCL - 10X the Maximum Contaminant Level as defined in 40 CFR 141, 40 CFR 143, and EPA 570/9-76-003
- PQL - 10X the Practical Quantitation Limit as listed in Appendix IX of 40 CFR 264
- CFWTL - 10X the Chronic Freshwater Toxicity Level as defined in EPA 440/5-86-001
- DCG - 10X one-twenty-fifth of the Derived Concentration Guide as listed in DOE Order 5400.5

2 Based on 10X MCL for 1,1,1-trichloroethane.

3 Criterion is below current detection limit so detection limit is used as criterion.

4 All chromium is assumed to be hexavalent.

Table 2. Constituents Not Analyzed for at Hanford but Listed in the CFWTL

2-chlorophenyl phenyl
Methylene bromide
Chlorine
Chloroprene
Chlorpyrifos
Chromium (tri)
Demeton
Entrin aldehyde
Gamphur
Guthion
Malathion
Mirex
Thionazin

Table 3. Constituents That Are Found In At Least One Well Above The Collection Criteria Established In This Strategy.

Constituent	Units	Detn. Limit	Collection Criteria
Gross beta	pCi/L	8.00	500.0
Strontium-90	pCi/L	5.00	80.0
Carbon Tetrachloride	PPB	5.00	50.0
Natural uranium	UG/L		590.0
Uranium	pCi/L	.10	400.0
Nitrate	PPB	500.00	450000.0
Gross alpha	pCi/L	4.00	150.0
Iodine-129	pCi/L	1.00	10.0
Chromium	PPB	10.00	110.0
Cyanide	PPB	10.00	52.0
Plutonium-239/40	pCi/L	.10	12.0
Toluene	PPB	5.00	20.0
Trans-1,2-dichloroethene	PPB	5.00	10.0
Manganese	PPB	5.00	500.0
Mercury	PPB	.10	.1
Chloroform	PPB	5.00	1000.0

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
1-D2-5	H22 FCHROMI ppb	110	01MAR90	120	Chromium, filtered
1-D5-12	H22 FCHROMI ppb	110	06MAR90	464	Chromium, filtered
1-D8-3	H22 FCHROMI ppb	110	01MAR90	146	Chromium, filtered
1-F5-3	111 BETA pCi/L	500	28FEB90	533	Gross beta
	121 SR-90 pCi/L	80	17OCT89	244	Strontium-90
1-F8-1	212 ALPHA pCi/L	150	13OCT87	219	Gross alpha
1-H4-3	H22 FCHROMI ppb	110	23APR90	141	Chromium, filtered
1-H4-7	H22 FCHROMI ppb	110	23APR90	136	Chromium, filtered
1-H4-11	H22 FCHROMI ppb	110	23APR90	142	Chromium, filtered
1-H4-12C	H22 FCHROMI ppb	110	17APR90	283	Chromium, filtered
1-H4-14	H22 FCHROMI ppb	110	25APR90	358	Chromium, filtered
1-H4-15A	H22 FCHROMI ppb	110	18APR90	114	Chromium, filtered
1-H4-18	H22 FCHROMI ppb	110	20APR90	126	Chromium, filtered
1-K-20	H22 FCHROMI ppb	110	01MAR90	156	Chromium, filtered

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Wellname	Constituent-Units Code		Action Level	Collection Date	Analytical Value	Constituent
1-K-22	H22 FCHROMI	ppb	110	02MAR90	157	Chromium, filtered
1-N-2	111 BETA	pCi/L	500	02FEB90	3320	Gross beta
	121 SR-90	pCi/L	80	02FEB90	1960	Strontium-90
1-N-3	111 BETA	pCi/L	500	14FEB90	680	Gross beta
	121 SR-90	pCi/L	80	14FEB90	607	Strontium-90
1-N-5	111 BETA	pCi/L	500	15JUN89	665	Gross beta
	121 SR-90	pCi/L	80	15JUN89	492	Strontium-90
1-N-7	038 I-131	pCi/L	30	16JAN87	309	Iodine-131
1-N-14	111 BETA	pCi/L	500	01FEB90	2100	Gross beta
	121 SR-90	pCi/L	80	01FEB90	987	Strontium-90
1-N-16	H31 FIRON	ppb	3000	01FEB90	3590	Iron, filtered
	H29 FMANGAN	ppb	500	01FEB90	2050	Manganese, filtered
1-N-17	H29 FMANGAN	ppb	500	01FEB90	610	Manganese, filtered
	121 SR-90	pCi/L	80	10NOV89	111	Strontium-90
1-N-18	111 BETA	pCi/L	500	20JUN89	1200	Gross beta
	121 SR-90	pCi/L	80	20JUN89	415	Strontium-90

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Wellname	Constituent-Units Code		Action Level	Collection Date	Analytical Value	Constituent
1-N-27	111 BETA	pCi/L	500	08FEB90	574	Gross beta
	121 SR-90	pCi/L	80	08FEB90	283	Strontium-90
1-N-28	038 I-131	pCi/L	30	14JAN87	28600	Iodine-131
1-N-29	111 BETA	pCi/L	500	07FEB90	2020	Gross beta
	038 I-131	pCi/L	30	16JAN87	14100	Iodine-131
	121 SR-90	pCi/L	80	07FEB90	1280	Strontium-90
1-N-30	038 I-131	pCi/L	30	14JAN87	687	Iodine-131
1-N-32	038 I-131	pCi/L	30	16JAN87	4830	Iodine-131
1-N-33	038 I-131	pCi/L	30	16JAN87	8500	Iodine-131
	121 SR-90	pCi/L	80	05FEB90	197	Strontium-90
1-N-36	038 I-131	pCi/L	30	16JAN87	11200	Iodine-131
	121 SR-90	pCi/L	80	01DEC89	224	Strontium-90
1-N-37	038 I-131	pCi/L	30	16JAN87	4380	Iodine-131
1-N-39	111 BETA	pCi/L	500	15MAY90	851	Gross beta
	038 I-131	pCi/L	30	16JAN87	5310	Iodine-131
	121 SR-90	pCi/L	80	21DEC89	454	Strontium-90

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code		Action Level	Collection Date	Analytical Value	Constituent
1-N-45	111 BETA	pCi/L	500	01DEC88	2480	Gross beta
	038 I-131	pCi/L	30	16JAN87	3760	Iodine-131
	121 SR-90	pCi/L	80	01DEC88	1130	Strontium-90
1-N-54	121 SR-90	pCi/L	80	01NOV89	171	Strontium-90
1-N-56	111 BETA	pCi/L	500	01NOV89	691	Gross beta
	121 SR-90	pCi/L	80	01NOV89	364	Strontium-90
1-N-67	111 BETA	pCi/L	500	05FEB90	16500	Gross beta
	121 SR-90	pCi/L	80	05FEB90	8980	Strontium-90
2-E17-1	081 I-129	pCi/L	10	10AUG87	47.3	Iodine-129
2-E17-5	081 I-129	pCi/L	10	16MAY89	13.2	Iodine-129
2-E17-8	081 I-129	pCi/L	10	02SEP87	29.2	Iodine-129
2-E17-9	081 I-129	pCi/L	10	16MAY89	16	Iodine-129
2-E17-13	081 I-129	pCi/L	10	02DEC87	10.1	Iodine-129
2-E17-14	081 I-129	pCi/L	10	15MAY89	14	Iodine-129
2-E17-15	081 I-129	pCi/L	10	21DEC88	12.7	Iodine-129

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table I of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-E23-1	A66 TOLUENE ppb	20	19MAR90	30	Toluene
2-E24-1	081 I-129 pCi/L	10	13JUL87	44.6	Iodine-129
	281 I-129DW pCi/L	10	11MAY88	26.6	Iodine-129 (for drinking water regs)
2-E24-11	C7Z NITRATE ppb	450000	12APR87	470000	Nitrate
2-E27-15	H38 FMERCUR ppb	0.12	26FEB90	0.23	Mercury, filtered
2-E28-23	111 BETA pCi/L	500	23MAR90	12900	Gross beta
	100 PU39-40 pCi/L	12	23MAR90	21.7	Plutonium-239,240
	121 SR-90 pCi/L	80	23MAR90	5240	Strontium-90
2-E28-24	112 ALPHAHI pCi/L	150	06APR90	1250	Gross alpha, high DL
	100 PU39-40 pCi/L	12	06APR90	144	Plutonium-239,240
	121 SR-90 pCi/L	80	06APR90	328	Strontium-90
2-E28-25	111 BETA pCi/L	500	23MAR90	12000	Gross beta
	100 PU39-40 pCi/L	12	23MAR90	19.3	Plutonium-239,240
	121 SR-90 pCi/L	80	23MAR90	6200	Strontium-90
2-E33-3	H38 FMERCUR ppb	0.12	23MAR88	0.17	Mercury, filtered
2-W6-1	A61 TETRANE ppb	50	10JUN87	220	Tetrachloromethane (Carbon Tetrachloride

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W6-2	A61 TETRANE ppb	50	10MAY90	102	Tetrachloromethane [Carbon Tetrachloride]
2-W7-4	A61 TETRANE ppb	50	08MAY90	158	Tetrachloromethane [Carbon Tetrachloride]
2-W10-1	H65 HNITRAT ppb	450000	28JUL88	456000	Nitrate, high DL
2-W10-3	H65 HNITRAT ppb	450000	28JUL88	661000	Nitrate, high DL
2-W10-4	A61 TETRANE ppb	50	01DEC88	2800	Tetrachloromethane [Carbon Tetrachloride]
2-W10-9	H22 FCHROMI ppb	110	28FEB90	135	Chromium, filtered
	A61 TETRANE ppb	50	23AUG88	2300	Tetrachloromethane [Carbon Tetrachloride]
2-W11-7	A61 TETRANE ppb	50	10NOV88	2500	Tetrachloromethane [Carbon Tetrachloride]
2-W11-14	212 ALPHA pCi/L	150	09MAR89	173	Gross alpha
	112 ALPHAHI pCi/L	150	13APR90	207	Gross alpha, high DL
	A61 TETRANE ppb	50	13APR90	790	Tetrachloromethane [Carbon Tetrachloride]
2-W11-23	H65 HNITRAT ppb	450000	21SEP88	757000	Nitrate, high DL
2-W14-2	C70 CYANIDE ppb	52	10NOV88	69	Cyanide
	A61 TETRANE ppb	50	10NOV88	920	Tetrachloromethane [Carbon Tetrachloride]
2-W14-5	A61 TETRANE ppb	50	10NOV88	860	Tetrachloromethane [Carbon Tetrachloride]

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W14-6	A61 TETRANE ppb	50	10NOV88	320	Tetrachloromethane [Carbon Tetrachloride]
2-W15-4	H65 HNITRAT ppb	450000	26SEP88	699000	Nitrate, high OL
	C72 NITRATE ppb	450000	29NOV88	662000	Nitrate
	A61 TETRANE ppb	50	29NOV88	1830	Tetrachloromethane [Carbon Tetrachloride]
2-W15-7	A61 TETRANE ppb	50	29NOV88	2390	Tetrachloromethane [Carbon Tetrachloride]
2-W15-8	112 ALPHAHI pCi/L	150	07MAY90	226	Gross alpha, high OL
	A80 CHLFORM ppb	1000	07MAY90	154	Chloroform [Trichloromethane]
	A61 TETRANE ppb	50	07MAY90	1110	Tetrachloromethane [Carbon Tetrachloride]
2-W15-10	A61 TETRANE ppb	50	29NOV88	3750	Tetrachloromethane [Carbon Tetrachloride]
2-W15-11	A61 TETRANE ppb	50	29NOV88	4350	Tetrachloromethane [Carbon Tetrachloride]
2-W15-12	A61 TETRANE ppb	50	05JUN89	1920	Tetrachloromethane [Carbon Tetrachloride]
2-W15-15	A61 TETRANE ppb	50	13MAR90	800	Tetrachloromethane [Carbon Tetrachloride]
2-W15-16	A61 TETRANE ppb	50	03APR90	8400	Tetrachloromethane [Carbon Tetrachloride]
2-W15-18	A61 TETRANE ppb	50	16MAR90	1700	Tetrachloromethane [Carbon Tetrachloride]
2-W15-19	A61 TETRANE ppb	50	04MAY90	710	Tetrachloromethane [Carbon Tetrachloride]

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W15-20	A61 TETRANE ppb	50	04MAY90	192	Tetrachloromethane [Carbon Tetrachloride]
2-W15-24	A61 TETRANE ppb	50	13MAR90	380	Tetrachloromethane [Carbon Tetrachloride]
2-W18-4	A61 TETRANE ppb	50	06JUN89	194	Tetrachloromethane [Carbon Tetrachloride]
2-W18-5	A61 TETRANE ppb	50	30NOV88	3640	Tetrachloromethane [Carbon Tetrachloride]
2-W18-9	A61 TETRANE ppb	50	03MAY90	121	Tetrachloromethane [Carbon Tetrachloride]
2-W18-15	A61 TETRANE ppb	50	01DEC88	89	Tetrachloromethane [Carbon Tetrachloride]
2-W18-17	A61 TETRANE ppb	50	20APR90	2000	Tetrachloromethane [Carbon Tetrachloride]
2-W18-21	A61 TETRANE ppb	50	13MAR90	180	Tetrachloromethane [Carbon Tetrachloride]
2-W18-23	A61 TETRANE ppb	50	11MAY90	675	Tetrachloromethane [Carbon Tetrachloride]
2-W18-24	A61 TETRANE ppb	50	03APR90	600	Tetrachloromethane [Carbon Tetrachloride]
2-W18-26	A61 TETRANE ppb	50	04MAY90	250	Tetrachloromethane [Carbon Tetrachloride]
2-W19-3	212 ALPHA pCi/L	150	13JAN89	1840	Gross alpha
	112 ALPHAHI pCi/L	150	04APR90	1360	Gross alpha, high DL
	081 I-129 pCi/L	10	20AUG87	32.9	Iodine-129
	A61 TETRANE ppb	50	02DEC88	120	Tetrachloromethane [Carbon Tetrachloride]

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Wellname	Constituent-Units Code		Action Level	Collection Date	Analytical Value	Constituent
2-W19-3	I04 U	pCi/L	420	04APR90	737	Uranium
	I24 U-CHEM	ug/L	600	10MAR89	2000	Uranium, chemical
2-W19-9	212 ALPHA	pCi/L	150	13FEB89	998	Gross alpha
	081 I-129	pCi/L	10	20AUG87	21.4	Iodine-129
	A61 TETRANE	ppb	50	15DEC88	112	Tetrachloromethane [Carbon Tetrachloride]
	I24 U-CHEM	ug/L	600	13FEB89	1400	Uranium, chemical
2-W19-11	212 ALPHA	pCi/L	150	21MAR88	1930	Gross alpha
	112 ALPHAHI	pCi/L	150	02APR90	867	Gross alpha, high DL
	081 I-129	pCi/L	10	20AUG87	31.6	Iodine-129
	A61 TETRANE	ppb	50	18JAN88	115	Tetrachloromethane [Carbon Tetrachloride]
	I04 U	pCi/L	420	02APR90	1030	Uranium
	I24 U-CHEM	ug/L	600	21MAR88	2610	Uranium, chemical
2-W19-15	A61 TETRANE	ppb	50	04APR90	127	Tetrachloromethane [Carbon Tetrachloride
2-W19-16	212 ALPHA	pCi/L	150	13FEB89	641	Gross alpha
	112 ALPHAHI	pCi/L	150	28MAR90	449	Gross alpha, high DL
	A61 TETRANE	ppb	50	28MAR90	193	Tetrachloromethane [Carbon Tetrachloride]
	I04 U	pCi/L	420	28MAR90	478	Uranium
	I24 U-CHEM	ug/L	600	13FEB89	641	Uranium, chemical

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Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W19-18	212 ALPHA pCi/L	150	13JAN89	2000	Gross alpha
	112 ALPHAHI pCi/L	150	28MAR90	1280	Gross alpha, high DL
	A61 TETRANE ppb	50	28MAR90	89	Tetrachloromethane [Carbon Tetrachloride]
	104 U pCi/L	420	28MAR90	1130	Uranium
	124 U-CHEM ug/L	600	060CT89	1880	Uranium, chemical
2-W19-19	212 ALPHA pCi/L	150	12JAN89	285	Gross alpha
	112 ALPHAHI pCi/L	150	04APR90	268	Gross alpha, high DL
	111 BETA pCi/L	500	04APR90	1090	Gross beta
	H65 HNITRAT ppb	450000	060CT89	1340000	Nitrate, high DL
	C72 NITRATE ppb	450000	04APR90	1250000	Nitrate
	197 TC-99 pCi/L	9000	060CT89	24600	Technetium-99
	104 U pCi/L	420	310CT89	547	Uranium
	124 U-CHEM ug/L	600	060CT89	638	Uranium, chemical
2-W19-20	212 ALPHA pCi/L	150	11JAN89	213	Gross alpha
	112 ALPHAHI pCi/L	150	20MAR90	214	Gross alpha, high DL
	111 BETA pCi/L	500	20MAR90	1830	Gross beta
	H65 HNITRAT ppb	450000	050CT89	1110000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	1050000	Nitrate
	197 TC-99 pCi/L	9000	050CT89	25400	Technetium-99

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code	Action Level	Collection Date	Analytical Value	Constituent
2-W19-23	H65 HNITRAT ppb	450000	05OCT89	490000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	586000	Nitrate
2-W19-24	212 ALPHA pCi/L	150	12JAN89	273	Gross alpha
	112 ALPHAHI pCi/L	150	20MAR90	254	Gross alpha, high
	111 BETA pCi/L	500	20MAR90	2740	Gross beta
	H65 HNITRAT ppb	450000	06OCT89	1040000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	584000	Nitrate
	197 TC-99 pCi/L	9000	06OCT89	41000	Technetium-99
2-W19-25	212 ALPHA pCi/L	150	12JAN89	183	Gross alpha
	112 ALPHAHI pCi/L	150	20MAR90	197	Gross alpha, high
	111 BETA pCi/L	500	20MAR90	2160	Gross beta
	H65 HNITRAT ppb	450000	05OCT89	960000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	931000	Nitrate
	197 TC-99 pCi/L	9000	05OCT89	33000	Technetium-99
2-W19-26	212 ALPHA pCi/L	150	01NOV88	300	Gross alpha
	H65 HNITRAT ppb	450000	05OCT89	1360000	Nitrate, high DL
	C72 NITRATE ppb	450000	27OCT89	1300000	Nitrate

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table 1 of WHC Purgewater Strategy Document.

Wellname	Constituent Code	Units	Action Level	Collection Date	Analytical Value	Constituent
2-W22-9	281 I-129DW	pCi/L	10	27SEP88	23.9	Iodine-129 (for drinking water regs)
2-W22-20	H22 FCHROMI	ppb	110	21FEB90	301	Chromium, filtered
2-W23-7	H38 FMERCUR	ppb	0.12	09JUN87	0.16	Mercury, filtered
3-1-16B	A91 TRANDCE	ppb	10	18DEC89	135	trans-1,2-Dichloroethene
3-1-17A	112 ALPHAHI	pCi/L	150	22MAY90	159	Gross alpha, high DL
6-35-70	081 I-129	pCi/L	10	09JUL87	47.2	Iodine-129
	281 I-129DW	pCi/L	10	15FEB90	10.7	Iodine-129 (for drinking water regs)
6-37-43	081 I-129	pCi/L	10	10SEP87	10.712	Iodine-129
6-38-70	A61 TETRANE	ppb	50	06APR90	58	Tetrachloromethane [Carbon Tetrachloride]
6-39-79	A61 TETRANE	ppb	50	23FEB89	820	Tetrachloromethane [Carbon Tetrachloride]
6-49-55A	C70 CYANIDE	ppb	52	27APR90	84.9	Cyanide
6-50-53	111 BETA	pCi/L	500	28APR89	1440	Gross beta
	C70 CYANIDE	ppb	52	17JAN89	641	Cyanide
	H65 HNITRAT	ppb	450000	28APR89	596000	Nitrate, high DL
	C72 NITRATE	ppb	450000	17JAN89	625000	Nitrate

Table 4. List of Wells Requiring Purge Water Containment Based on the Most Recent Sampling for The Constituent Listed in Table I of WHC Purgewater Strategy Document.

Wellname	Constituent-Units Code		Action Level	Collection Date	Analytical Value	Constituent
6-53-47B	121 SR-90	pCi/L	80	26MAR90	113	Strontium-90
6-53-48A	121 SR-90	pCi/L	80	19APR89	124	Strontium-90
6-53-48B	121 SR-90	pCi/L	80	19APR89	240	Strontium-90
6-54-48	121 SR-90	pCi/L	80	26MAR90	126	Strontium-90
6-97-43	H22 FCHROMI	ppb	110	16JAN89	192	Chromium, filtered
6-97-51A	H22 FCHROMI	ppb	110	31AUG88	112	Chromium, filtered

113 Total Wells Require Purgewater Containment